

# ATOMIC ENERGY

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Dear Sir:

July 31st, 1951

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Facilities in Oak Ridge, Tennessee, for the exclusive processing of radioactive isotopes for medical diagnosis and therapy, have been acquired by Abbott Laboratories, that company announced last week. One of the major pharmaceutical houses engaged in research with radioactive medicines, Abbott has been supplying "tagged" compounds to qualified hospitals and cancer clinics from its laboratories in North Chicago, Ill., since 1946. According to the company, one of the principal reasons for the move is the rapidly increasing medical interest in radioactive gold for the treatment of inoperable peritoneal and pleural tumors. The short half-life of irradiated gold is 2.7 days--and much of the compound's valuable activity was being lost in transit between the source of the material (the USAEC nuclear reactor at Oak Ridge), the chemical processing at Abbott Laboratories, and the air-express shipment to the ultimate user. Abbott has acquired in Oak Ridge, for its production facilities, 4000 square feet in a two year old structure; it has signed a lease with the USAEC running until 1969. (It will, however, continue to handle orders from North Chicago.)

As the first independent commercial activity related directly to atomic energy and situated in a community of the USAEC, this step by Abbott (above) assumes interest by virtue of its pioneer nature. It was described by an official of the USAEC as one step in the Commission's efforts to attract varied industries and new businesses to Oak Ridge to help develop a well-rounded community. Significance has also been attached by industry observers to the long-term nature of Abbott's lease. This has been cited as evidence that the Oak Ridge operation is of a permanent character. Further, that Abbott believes the demand for radioactive isotopes for medical diagnosis and therapy will continue to expand. Dr. D. L. Tabern is Head of the Radioactive Pharmaceuticals Department of Abbott. Mr. G. I. Gleason will be in direct charge of Abbott's Oak Ridge laboratories.

A two-week symposium on the engineering aspects of atomic energy will be held at Oak Ridge August 27-September 7. As the 3rd annual symposium conducted by the Institute of Nuclear Studies and the National Laboratory, of Oak Ridge, this particular symposium will be sponsored by the American Society for Engineering Education. Sessions will be open to all interested engineers, scientists and educators. Subjects will include economic aspects of atomic power; treatment of radioactive wastes; materials of reactor construction; review of reactor types; stable isotope separations; hazards associated with low-power research reactors; standards of radiological protection and control; chemical problems in the development of reactors; and thermal problems in reactor design.

A technical summary, for guidance in the consideration of radioactive materials in connection with fire and marine insurance problems, has been issued by the Joint Fire and Marine Insurance Committee on Radiation. Copies of the 12- page booklet may be obtained from W. H. Forristall, Factory Insurance Association, 555 Asylum St., Hartford, 2, Conn.

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

A laminated window, to minimize the effects of explosive forces, and eliminate the dangers of flying glass is now being made by the Pittsburgh Plate Glass Co. The outer layer of the laminate is glass, the middle layer is partially segmented poly-vinyl butyral plastic, and the inner layer is made of four triangular pieces of glass. According to the manufacturer, when the outer plate of glass is broken, the plastic layer--the edges of which are bolted to the window frame--and inner glass segments swing inward and later may be returned to the original positions. The company states that it tested this glass with an explosive force greater than the Hiroshima-type atomic bomb at a distance of one mile. It is pointed out that the factor which prevents the window from blowing into the room is that the vinyl plastic will stretch up to 400% of unstressed length, and that it can return to within 0.5% without rupture.

Dosimeters, Models L-31, L-32, and L-33, with ranges of 5r, 10r, and 50r, respectively, are now being offered by Landsverk Electrometer Co., Glendale 4, Calif. (affiliated with Technical Associates, of that address). One-half inch in diameter, by four inches long, these instruments have barrels of conducting laminated bakelite, and are hermetically sealed. Manufacturer states that the flexible plastic diaphragm for charging will not crack from use or aging, and that these instruments meet all standard specifications for their ranges. They are charged on this firm's model L-21 charger.

BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Civil Defense in Modern War, by A. M. Prentiss. The requirements to survive the various agents used in modern total warfare: radiological, bacteriological, etc. 429 pages.--McGraw-Hill Book Co., New York 18, N. Y. (\$6.00)

Papers presented at the Conference of Teachers of Clinical Radiology; now available in the publication "Radiology", volume 56, May, 1951. These papers include: (a) Injury from atomic bombs, by E. DeCoursey; (b) Suggestions for teaching radiological aspects of atomic defense, by Roger A. Harvey; (c) Evaluation of radiological hazards and the therapy of radiation sickness by C. F. Behrens, (d) Radioactive decontamination, by C. R. Schwob; (e) The diagnosis, prognosis, and treatment of radiation injuries produced by atomic bombs, by E. P. Cronkite, (f) The detection of radiation hazards; instruments and personnel, by W. F. Bale, (g) Mobilization of health resources for defense, by W. H. Aufranc.

PEOPLE...in the atomic energy program...

Radioactive Products, Inc., Detroit manufacturer of nucleonic and allied products, has now announced the election of Mr. Homer S. Myers, as president, and Mr. F. W. Gridley as treasurer. The position of president was vacated by the resignation of Mr. A. P. Fontaine who has accepted the position of vice-president and general manager of Consolidated Vultee Aircraft. (Mr. Myers, formerly vice-president of Radioactive, has stated that the current backlog of orders of that company are in excess of \$100,000.00; approximately 80% of these are rated orders from the USAEC, its prime contractors, and direct government agencies.)

High Voltage Engineering Corp., Cambridge, has appointed Davis R. Dewey, 2nd, as vice-president. His responsibilities will include direction of the sales program, the company said, assisted by E. Alfred Burrill, who heads the sterilization and radiographic sales activities. High Voltage Engineering manufactures electrostatic generators above the million-volt range for cancer therapy, industrial radiography, nuclear particle acceleration, and food and drug sterilization.

Dr. Manson Benedict has been appointed technical assistant to the General Manager of the USAEC, Washington, to organize an operations analysis staff for that agency. The staff will function to make special analyses of technical problems involved in atomic energy development.

Robert L. Corsbie will now head the USAEC's liaison with civil defense agencies on hazards connected with atomic weapons. He will function as Chief, Civil Defense Liaison Branch, USAEC's division of Biology and Medicine.

ATOMIC PATENT DIGEST...latest U S applications and grants...

GRANTS-Beta irradiation method and means. Comprises an ophthalmic applicator which has radioactive material consisting wholly of radium D radium E, and radium F. This applicator incorporates a filter which is permeable only to beta rays emitted at the energy level of the beta rays emitted by radium E. U. S. Pat. No. 2,559,793, issued July 10, 1951 to Alexander Fregel, New York; assigned to Canadian Radium and Uranium Corp., N. Y.

PATENTS AVAILABLE FOR LICENSE- The following 15 USAEC-sponsored, U.S. Government-owned patents are now available to U. S. firms on a royalty-free (non-exclusive) basis. Inquiries concerning these, as well as the previously-released 283 similarly available atomic energy patents, should be directed to Chief, Patent Branch, USAEC, Washington 25, D.C. This latest group comprises: (1) Preparation of diborane. A process for purifying diborane contaminated with hydrogen halides which comprises contacting the impure mixture with an amine such as trialkylamine or pyridine which will form non-volatile addition compounds with the contaminating halide. U. S. Pat. No. 2,555,512. (2) Needle valve for controlling the flow of corrosive gases. This valve has a control chamber of variable size with a flexible wall encompassing the flow control elements so that a minimum number of moving parts are exposed to the corrosive gases. U. S. Pat. No. 2,555,996. (3) A simple pulse modulation circuit wherein a rapid transmission of intelligence with high signal to noise ratio is obtainable. U. S. Pat. No. 2,556,457. (4) Neutron detector with substantially uniform sensitivity to neutrons between energies of a few kilovolts and a few million volts. U. S. Pat. No. 2,556,768. (5) Gold and beryllium alloy and method of manufacture. Preparing an alloy of gold and beryllium by mixing about 8% beryllium powder with about 92% gold powder, compacting, heating, and compressing. U. S. Pat. No. 2,556,921. (6) Flux phase indicators. A device which will graphically depict the magnetic flux phase difference between points in a varying magnetic field. U. S. Pat. No. 2,557,761. (7) Method of preparing high density uranium hydride compacts which comprises treating uranium metal which is in the form of a plurality of pieces with hydrogen at about 200 deg. C., and confining the resultant hydride to the original volume of the metal to cause high compacting pressures to be generated. U. S. Pat. No. 2,558,377. (8) Testing device to measure and indicate the position of an inner conductor of a coaxial cable with respect to the cable sheath; a feeding mechanism automatically feeds the cable through the device, and the device may be affixed to the cable at any desired position. U. S. Pat. No. 2,558,485. (9) An electromagnetic liquid metal pump of increased efficiency which uses a series of insulating barrier vanes inside the liquid metal conduit to reduce the tendency of the electric current to diverge in passing through the liquid metal. U. S. Pat. No. 2,558,698. (10) Neutron density measuring device which utilizes a composite member which fluoresces or phosphoresces when subjected to neutron irradiation. The composite member is made by superposing a layer of a fluorescent or phosphorescent material upon a layer of material which fissions when subjected to neutron irradiation. U. S. Pat. No. 2,558,919. (11) Preparing a source of pure beta emissions by incorporating a potential beta emitter such as red phosphorous into a suitable plastic, forming into a desired shape, and thereafter subjecting to neutron irradiation. U.S. Pat. No. 2,559,259. (12) Polymerizable methyl methacrylate compositions are cast by affecting a solution of the polymeric material in the monomer by the use of a mutual solvent for the two, which has a boiling point below that of the monomer, then removing the solvent by low pressure low temperature distillation and casting the resultant solution at a temperature not in excess of 50 deg. C. U. S. Pat. No. 2,559,345. (13) A pneumatic closure for effectively sealing the ends of a hollow test specimen undergoing leak detection so that in-leakage from the atmosphere surrounding the test specimen must necessarily be caused by faults in the specimen and not by leaks in the seal. U. S. Pat. No. 2,559,564. (14) Pulse analyzer for counting pulses of voltage of short duration and the same amplitude over a large range of amplitudes. U. S. Pat. No. 2,560,166. (15) Pulse shaping circuit comprising a pulse sharpener, an amplifier, a pulse flattening circuit and a cathode follower output circuit. U. S. Pat. No. 2,560,167.

RAW MATERIALS...radioactive minerals for nuclear work...

UNITED STATES-Grand Junction, Colo.: Presenting in preliminary form the results of intensive investigations made by the U.S. Geological Survey, a report has just been released by the Department of the Interior describing the geology of a narrow, elongate belt in southwestern Colorado where carnotite deposits have a closer spacing, larger size, and higher grade than those in adjoining areas. Called the Uravan mineral belt, it ranges from one to several miles in width, and extends from Gateway through Uravan to Slick Rock, a distance of about 50 miles. The carnotite deposits in this mineral belt are clustered in favorable areas, 1,000 to several thousand feet wide, and from one-half to several miles long. These areas are elongate at right angles to the local trend of the whole belt. This report: "The Uravan Mineral Belt", prepared by R. P. Fischer and L. S. Hilpert, of the USGS, is not yet in printed form. It may be seen, however, with accompanying maps, etc., at the USGS Library in Washington, D.C. and Denver, Colo.; and at the USGS field headquarters, (office of the USAEC) Grand Junction, Colo.

CANADA- The tonnage of uranium ore milled and sorted in 1950, by Eldorado Mining and Refining, the Canadian government's uranium producer, was up 29% from 1949, according to that company's annual report, recently made available, (Contract delivery schedules were not revealed.) Production from Eldorado's Ace property, at Beaverlodge Lake, Northern Saskatchewan, is scheduled to start early in 1953. At this property, a shaft will be sunk to 1,100 feet on the Fay zone, some 4,000 feet west of the Ace shaft. Sizable ore bodies have been disclosed by surface drilling in the Fay zone, and the new shaft will be designed at the main production opening for both the Fay and Ace zones, with maximum hoisting capacity 2,000 tons per day. At the Port Radium mine, a new leaching plant for treatment of tailings is expected to start operating in the first quarter of 1952. Gross revenue from the sale of radium, polonium, and associated products was \$451,824.00, an increase of 4.1% over 1949. There was an increase of 19% in revenues from commercial sales during the year; sales and rentals covered medical, industrial and research products, including needles plaques, and special applicators for therapy, radiography capsules, luminous compounds, ionotrons for industry, and neutron sources for research. The main efforts of the research staff, during 1950, were directed to the production of a design for a deep therapy unit using cobalt-60, for which Eldorado holds exclusive sales agency from the National Research Council; this Council controls and directs Canada's atomic energy projects, centered at Chalk River. Also, in 1950, the agency arrangement with the Council was expanded to cover most of the Council's nuclear reactor-produced isotopes, and Eldorado plans expansion of both sales and development staff and facilities.

RADIOISOTOPES...industrial applications...

An irradiation service for industrial concerns, making use of thousand curie sources of gamma radiation, is now available at Brookhaven National Laboratory, Upton, L.I., to assist industrial organizations in applying ionizing radiation to industrial processes. Under this service, concerns may arrange with Brookhaven to have small samples of materials or products exposed to radiation from the high gamma sources. Then, since materials so exposed do not themselves become radioactive, the samples are returned to the sender for analysis and evaluation of the results of their irradiation. The thousand curie sources, made of cobalt-60 or tantalum-182, each release as much radiation as a kilogram (2.2 pounds) of radium. Brookhaven research people already have used radiation from a cobalt source to induce polymerization; in one such experiment, a clear plastic was produced without the presence of heat, pressure, and catalysts common in plastics manufacture. Inquiries concerning this irradiation service should be made to the Director's Office, at Brookhaven.

Sincerely,

The Staff,  
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